

# G2U4407

## P-CHANNEL ENHANCEMENT MODE POWER MOSFET

BV <sub>DSS</sub>	-30V
R <sub>DS(ON)</sub>	14mΩ
I <sub>D</sub>	-50A

### Description

The G2U4407 provide the designer with the best combination of fast switching, ruggedized device design, low on-resistance and cost-effectiveness.

The TO-262 package is universally preferred for all commercial-industrial applications and suited for low voltage applications such as DC/DC converters.

### Features

- \*Simple Drive Requirement
- \*Lower On-resistance
- \*Fast Switching Characteristic

### Package Dimensions

REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	4.40	4.80	c2	1.25	1.45
b	0.76	1.00	b2	1.17	1.47
c	0.36	0.50	L	13.25	14.25
D	8.60	9.00	e	2.54 REF.	
E	9.80	10.4	L2	1.27 REF.	

### Absolute Maximum Ratings

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V <sub>DS</sub>	-30	V
Gate-Source Voltage	V <sub>GS</sub>	±25	V
Continuous Drain Current, V <sub>GS</sub> @10V	I <sub>D</sub> @T <sub>C</sub> =25°C	-50	A
Continuous Drain Current, V <sub>GS</sub> @10V	I <sub>D</sub> @T <sub>C</sub> =100°C	-32	A
Pulsed Drain Current <sup>1</sup>	I <sub>DM</sub>	-180	A
Total Power Dissipation	P <sub>D</sub> @T <sub>C</sub> =25°C	54	W
Linear Derating Factor		0.4	W/°C
Operating Junction and Storage Temperature Range	T <sub>j</sub> , T <sub>stg</sub>	-55 ~ +150	°C

### Thermal Data

Parameter	Symbol	Value	Unit
Thermal Resistance Junction-case Max.	R <sub>thj-case</sub>	2.3	°C/W
Thermal Resistance Junction-ambient Max.	R <sub>thj-amb</sub>	62	°C/W

**Electrical Characteristics(T<sub>j</sub> = 25°C Unless otherwise specified)**

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	-30	-	-	V	V <sub>GS</sub> =0, I <sub>D</sub> =-250uA
Breakdown Voltage Temperature Coefficient	$\Delta BV_{DSS} / \Delta T_j$	-	-0.01	-	V/°C	Reference to 25°C, I <sub>D</sub> =-1mA
Gate Threshold Voltage	V <sub>GS(th)</sub>	-1.0	-	-3.0	V	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =-250uA
Forward Transconductance	g <sub>fs</sub>	-	36	-	S	V <sub>DS</sub> =-10V, I <sub>D</sub> =-24A
Gate-Source Leakage Current	I <sub>GSS</sub>	-	-	±100	nA	V <sub>GS</sub> = ±25V
Drain-Source Leakage Current(T <sub>j</sub> =25°C)	I <sub>DSS</sub>	-	-	-1	uA	V <sub>DS</sub> =-30V, V <sub>GS</sub> =0
Drain-Source Leakage Current(T <sub>j</sub> =150°C)		-	-	-25	uA	V <sub>DS</sub> =-24V, V <sub>GS</sub> =0
Static Drain-Source On-Resistance <sup>2</sup>	R <sub>DS(ON)</sub>	-	-	14	mΩ	V <sub>GS</sub> =-10V, I <sub>D</sub> =-24A
		-	-	23		V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-16A
Total Gate Charge <sup>2</sup>	Q <sub>g</sub>	-	35	60	nC	I <sub>D</sub> =-24A V <sub>DS</sub> =-24V V <sub>GS</sub> =-4.5V
Gate-Source Charge	Q <sub>gs</sub>	-	5	-		
Gate-Drain ("Miller") Charge	Q <sub>gd</sub>	-	26	-		
Turn-on Delay Time <sup>2</sup>	T <sub>d(on)</sub>	-	11	-	ns	V <sub>DS</sub> =-15V I <sub>D</sub> =-24A V <sub>GS</sub> =-10V R <sub>G</sub> =3.3Ω R <sub>D</sub> =0.63Ω
Rise Time	T <sub>r</sub>	-	64	-		
Turn-off Delay Time	T <sub>d(off)</sub>	-	63	-		
Fall Time	T <sub>f</sub>	-	100	-		
Input Capacitance	C <sub>iss</sub>	-	2120	3390	pF	V <sub>GS</sub> =0V V <sub>DS</sub> =-25V f=1.0MHz
Output Capacitance	C <sub>oss</sub>	-	630	-		
Reverse Transfer Capacitance	C <sub>rss</sub>	-	550	-		

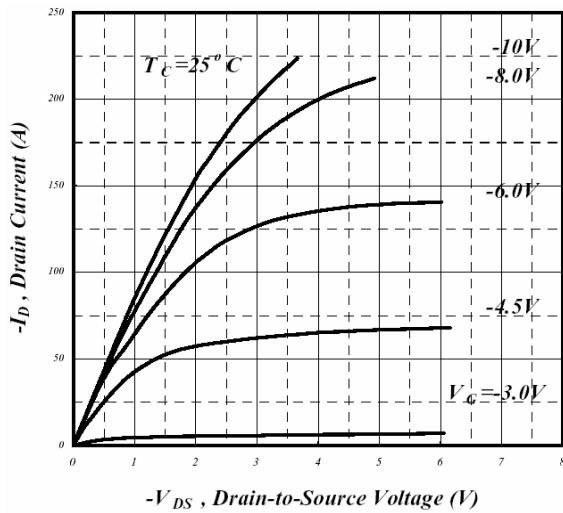
**Source-Drain Diode**

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Forward On Voltage <sup>2</sup>	V <sub>SD</sub>	-	-	-1.2	V	I <sub>S</sub> =-24A, V <sub>GS</sub> =0V
Reverse Recovery Time <sup>2</sup>	T <sub>rr</sub>	-	39	-	ns	I <sub>S</sub> =-24A, V <sub>GS</sub> =0V di/dt=100A/μs
Reverse Recovery Charge	Q <sub>rr</sub>	-	38	-	nC	

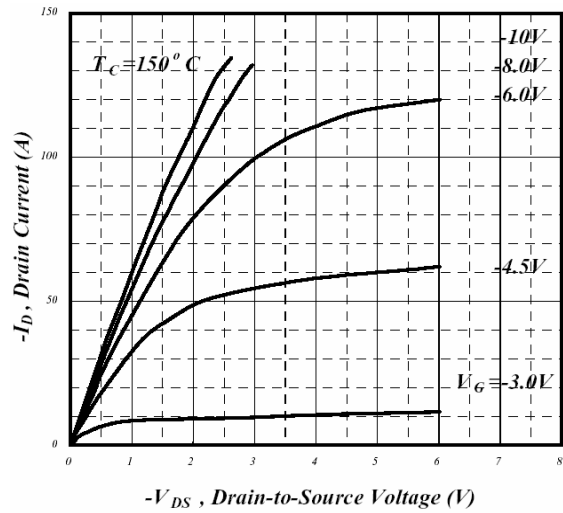
Notes: 1. Pulse width limited by safe operating area.

2. Pulse width ≤ 300us, duty cycle ≤ 2%.

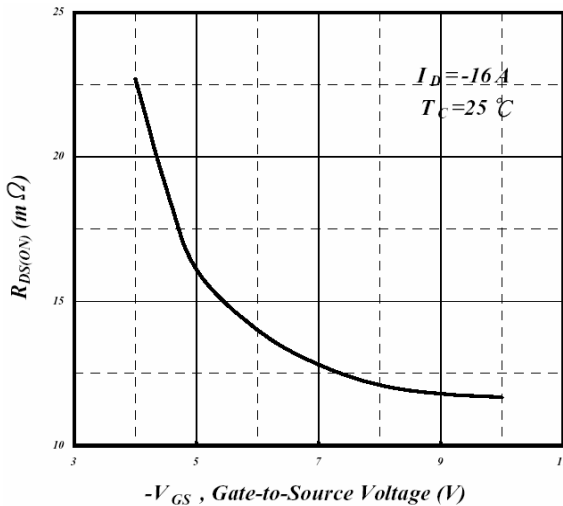
**Characteristics Curve**



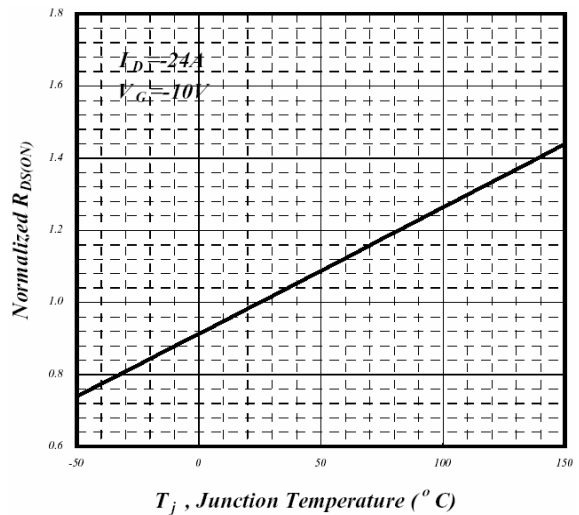
**Fig 1. Typical Output Characteristics**



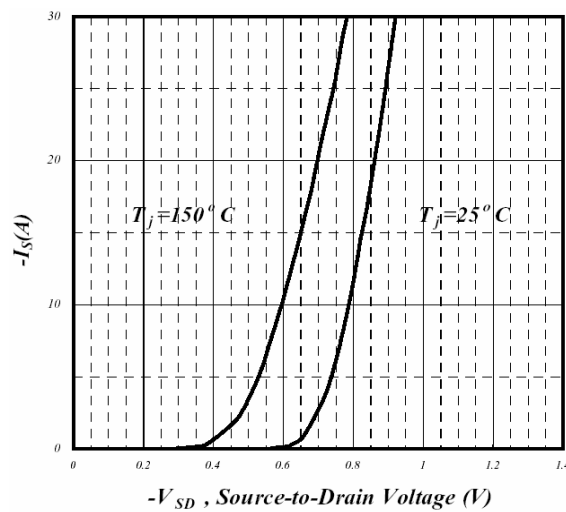
**Fig 2. Typical Output Characteristics**



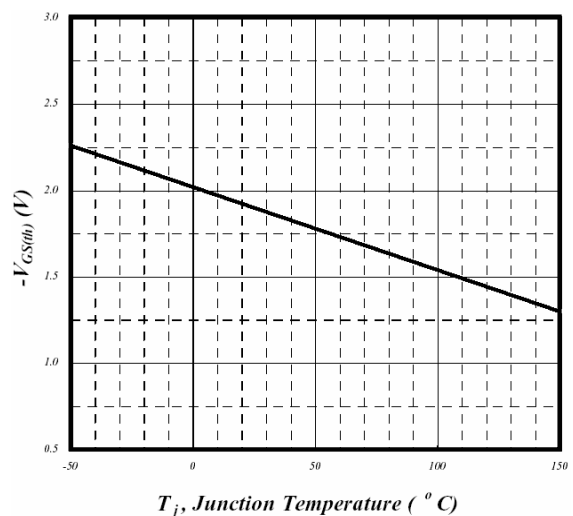
**Fig 3. On-Resistance v.s. Gate Voltage**



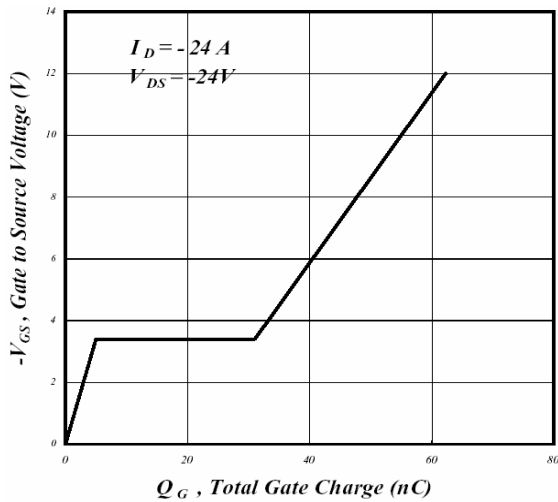
**Fig 4. Normalized On-Resistance v.s. Junction Temperature**



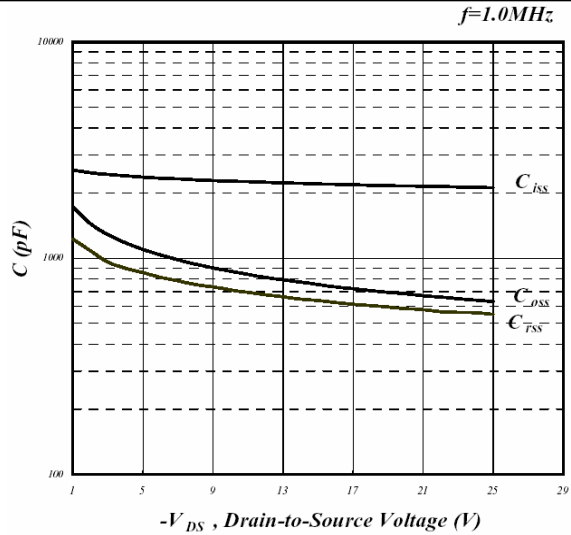
**Fig 5. Forward Characteristics of Reverse Diode**



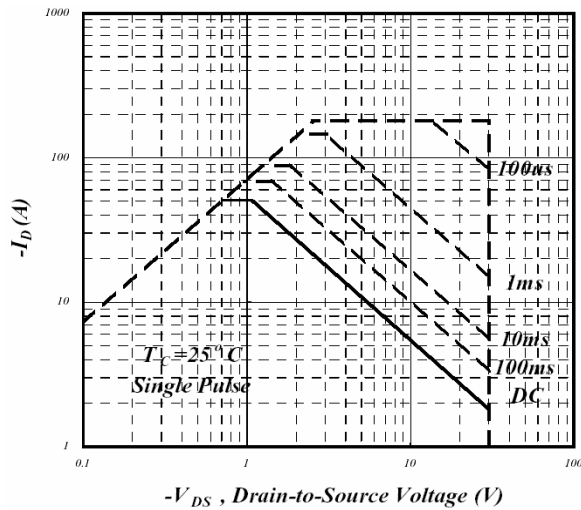
**Fig 6. Gate Threshold Voltage v.s. Junction Temperature**



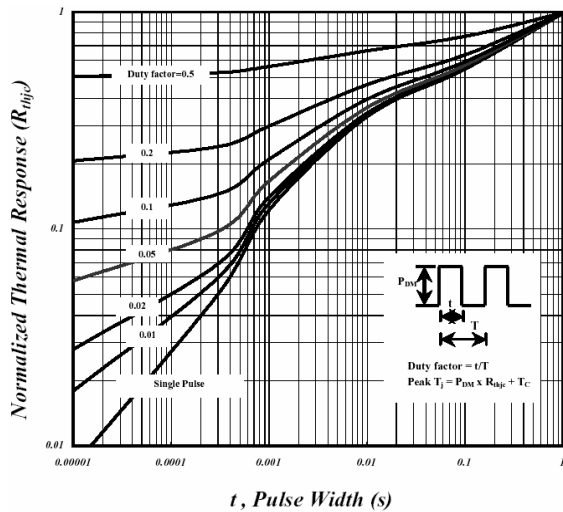
**Fig 7. Gate Charge Characteristics**



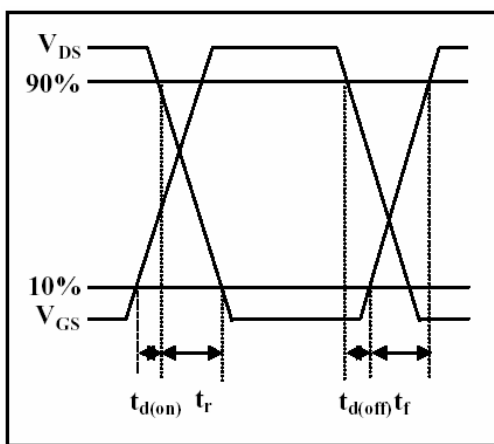
**Fig 8. Typical Capacitance Characteristics**



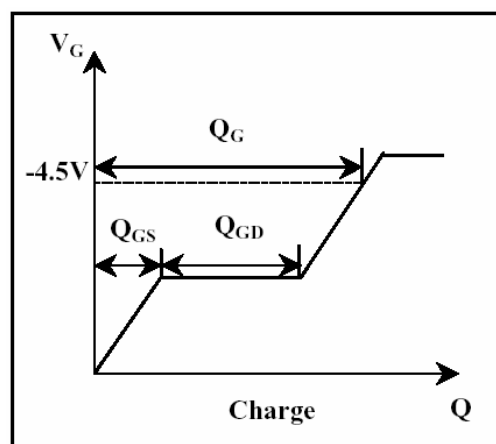
**Fig 9. Maximum Safe Operating Area**



**Fig 10. Effective Transient Thermal Impedance**



**Fig 11. Switching Time Waveform**



**Fig 12. Gate Charge Waveform**

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